

## **REMARKS**

### **Priority Claim**

The specification has been amended to reflect priority claims to provisional application 60/081,492, and PCT/US99/07970. It is believed that this amendment is timely under 37 C.F.R. 1.78(a)(2)(ii)(C) (see MPEP 202.01), and that no petition or fee is required. The Applicants note that the priority claim was reflected in the October 2, 2000 transmittal letter, as well as the Notification of Missing Requirements mailed by the USPTO on November 1, 2000.

### **Claim Rejections - 35 USC 112**

Claims 4 and 9-35 stand rejected under 35 USC 112. The claims have been amended or canceled to remove the language that led to this rejection. Specifically:

Claims 4, 22 and 35 have been canceled, rendering moot the rejection of those claims.

Claims 9-14: These claims stand rejected on the basis that claim 9 does not specify where the organic coating is applied. Claim 9 has been amended to specify that the organic coating is applied “over the first electrode.” It is intended that the term “over” allows for intervening layers between the organic coating and the electrode. Support for this term can be found at page 9, lines 3-14. (organic coating spun on to ITO-coated substrate).

Claims 15-17: These claims stand rejected on the basis that there is no antecedent basis for the terms “the second organic layer” or “the organic second layer.” It is believed that the issue was that the second layer was sometimes described as organic, and sometimes not. These claims have been amended to remove the adjective “organic” from all recitations of the “second layer” such that there is no antecedent basis problem. The limitation that the second layer is “organic” has been preserved through the addition of a “wherein” clause to claim 15.

Claim 18: This claim stands rejected on the basis that the term “transferred to second” is not clear. The claim has been amended to read “transferred to the second layer,” consistent with the examiners assumption and the previously noted amendment to claims 15-17.

Claims 19-27: These claims stand rejected on the basis that it is not clear in claim 19 whether the first layer has the dopant as in claim 15. Claim 19 has been amended to specify that the first layer contains the dopant (similar to claim 15). Support for this limitation may be found at page 11, lines 8-16.

Claims 28-35: These claims stand rejected on the basis that it was unclear as to what the term “thereon” was referring in claim 28. Claim 28 has been amended to remove the claim term “thereon” and to describe specifically where various materials are being deposited.

Claim 31: This claim stands rejected on the basis that there is no statement describing to what the droplets are applied. Claim 31 has been amended to depend on claim 30 instead of claim 29. With the addition of the limitations from claim 30, it is now clear that the droplets, which contain the dopant, are applied “onto the organic coating.” The structure of the claim dependencies for claims 30 and 31 is now similar to the structure of claims 2 and 3, which were not previously rejected under 35 USC 112 for the reasons at issue in this paragraph.

Claim 33: This claim has been canceled, rendering moot the 35 USC 112 rejection.

## **Objections**

Claims 14 and 16: These claims stand objected to on the basis that they do not further limit the subject matter of a previous claim. Specifically, it is asserted that the claim terms “pattern” and “selected area” is inclusive of all areas. With respect to claim 14, which uses the claim term “pattern,” the applicants respectfully disagree and traverse the rejection. The specification at page 2, lines 1-15, distinguishes between “blanket” films (i.e. films that are uniform or “inclusive of all areas”) and “patterned” films. Claim 16 has been amended to also use the term “pattern” instead of “selected areas.”

## **Claim Rejections - 35 USC 102**

### **Claims 9, 11, 13, 15-17, 19, 24-25, and 27**

Claims 9, 11, 13, 15-17, 19, 24-25, and 27 stand rejected as anticipated by US Patent No 5,673,077 to Kawakami.

Claims 9 and 15 have been amended to add additional limitations relating to the fabrication of electrodes, such that the claim now describes the manufacture of a device as opposed to an organic film. Support for these limitations may be found at page 9, lines 9-31.

Kawakami discloses the removal of a “colorant” from a “recording material” to an “image receiving material.” col. 16, lines 19-30. Kawakami does not teach or suggest that the used recording material be used to fabricate a device, or that electrodes be incorporated into the used recording material. In fact, Kawakami teaches away from using the spent recording material for any purpose, since it would contain a negative of the desired image -- the desired image having been transferred to the “image receiving material.”

Claim 19 requires that a dopant be applied in a “pattern” to the first layer. This pattern determines where dopant is transferred into the second layer. By way of contrast, Kawakami discloses a uniform application of colorant, as described by the examiner on page 4 of the December 5, 2002 office action. The claim term “pattern” excludes a uniform application, as argued above with respect to objections to claims 14 and 16. In fact, Kawakami teaches away from applying colorant in a pattern, because it teaches the transfer of a colorant from a colorant layer to an image receiving material through an “ablated hole” in a “colorant barrier layer.” This scheme is contrary to patterning the colorant in the colorant layer, because the ablated holes are used for patterning and colorant should be present everywhere underneath the colorant barrier layer, so that it is available wherever a hole might be ablated. Because Kawakami does not teach or suggest patterning a dopant in a first layer for subsequent transfer to a second layer, the Applicants respectfully request reconsideration and withdrawal of this rejection.

Claims 11, 13, 16-17, 24-25 and 27 are dependent on claims 9, 15 and 19. The Applicants respectfully assert that the dependent claims are patentable for at least the same reasons as the independent claims from which they depend. The Applicants silence with respect to the particular rejection of a dependent claim does not indicate acquiescence.

#### **Claims 9-10 and 14**

Claims 9-10 and 14 stand rejected as anticipated by US Patent No. 4,332,879 to Pastor et al.

Pastor teaches the removal of a coating that contains a dopant. As described by the examiner, the unwanted portions of the coating are removed in their entirety -- the coating as

well as the dopants are removed. By way of contrast, claim 9 (and dependent claims 10 and 14) require that a dopant be “removed *from* areas of the coating” (emphasis added) -- i.e., the coating remains after the dopant has been removed. Because Pastor does not teach the removal of dopant from a coating, it does not anticipate claim 9 and claim dependent upon claim 9.

**Claims 1-7, 9, 11, 28-31 and 34-36**

Claims 1-7, 9, 11, 28-31 and 34-36 stand rejected as anticipated by US Patent No. 5,895,692 to Shirasaki et al.

Claims 1, 28 and 36 have been amended to specify that the dopant diffuses into the organic host material through the use of a solvent, as contrasted to Shirasaki which requires the application of heat or other energy. Support for this limitation may be found at numerous places in the specification, including page 11, lines 1-7. In fact, the fabrication of an actual film as described at page 8, lines 24-32, provides an example of a specific solvent / host / dye combination that provides such diffusion without heating. Further support may be found at page 12, lines 19-22 (solvent infiltration may be used “in lieu of” heat treating), and elsewhere.

By way of contrast, it is believed that every example and every claim of Shirasaki requires the application of energy in order to diffuse pigment into an organic layer. Shirasaki goes to great lengths to describe different ways in which the energy may be applied. col. 7, lines 26-54. Neither does Shirasaki disclose specific solvents that might allow for diffusion without the application of energy.

The present application teaches that the application of energy is not needed to suitably diffuse a dopant into an organic layer, and enables this teaching through specific examples. This limitation is significant, because eliminating the need for heating or electrical treatment simplifies manufacture and reduces cost.

With respect to claim 9, Shirasaki does not teach the removal of a dopant *from* areas of a coating -- i.e. the coating with the dopant removed is the end product of the process. Rather, Shirasaki teaches the addition of dopant to an organic layer. The drops from which the dopant diffuses (see Figure 7B) in Shirasaki are not analogous to the coating of claim 9, because the drops do not survive the process, whereas the coating of claim 9 does, as indicated from the claim language that dopant is removed *from* the coating, and the subsequent deposition of a

second electrode *over* the organic coating -- which could not happen if the organic coating were destroyed. The Applicants request reconsideration and withdrawal of the rejection of claim 9.

Claims 7, 11, and 29-31 are dependent on the independent claims discussed above. The Applicants respectfully assert that the dependent claims are patentable for at least the same reasons as the independent claims from which they depend. The Applicants silence with respect to the particular rejection of a dependent claim does not indicate acquiescence. Claims 34-35 have been canceled, rendering moot the rejection of those claims.

**Claims 1-3, 6-7, 9-10, 14-16, 18-21, 24-25, 28-31, and 33**

Claims 1-3, 6-7, 9-10, 14-16, 18-21, 24-25, 28-31, and 33 stand rejected as anticipated under 35 USC 102(e) in view of U.S. Patent 6,066,357 to Tang et al.

The specification has been amended to clarify that the present application claims priority to U.S. provisional application 60/081,492, filed on April 13, 1998. As a result, Tang is not prior art.

**Claim Rejections - 35 USC 103**

**Claims 4 and 35**

Claims 4 and 35 stand rejected as obvious in view of Shirasaki '692 in combination with US Patent No. 5,551,973 to Oliver et al.

Claims 4 and 35 have been canceled, rendering the rejection moot.

**Claim 8**

Claim 8 stands rejected as unpatentable over Shirasaki '692 as applied to claim 7, and in further view of US Patent 6,150,042 to Tamano et al.

Claim 8 is ultimately dependent on claim 1. The rejection of claim 1 (and dependent claim 7) in view of Shirasaki is addressed above. The Applicants respectfully assert that claim 8 is patentable for at least the same reasons as claim 1. The Applicants silence with respect to the particular rejection of that claim does not indicate acquiescence.

**Claim 12**

Claim 12 stands rejected as unpatentable over Pastor '879 as applied to claim 10, and in further view of US Patent 3,614,225 to Dinella.

Claim 12 is dependent on claim 10, which is in turn dependent upon claim 9. The rejection of claims 9 and 10 in view of Pastor is addressed above. The Applicants respectfully assert that claim 12 is patentable for at least the same reasons as claims 9 and 10. The Applicants silence with respect to the particular rejection of that claim does not indicate acquiescence.

### **Claims 22-23 and 27**

Claims 22-23 and 27 stand rejected as unpatentable over Tang '357 as applied to claims 19-20, in further view of Shirasaki '692.

As explained above, Tang is not prior art. The Applicants respectfully request reconsideration and withdrawal of this rejection.

### **Claim 22**

Claim 22 stands rejected as unpatentable over Tang '357 as applied to claim 20, in further view of Oliver '973.

As explained above, Tang is not prior art. The Applicants respectfully request reconsideration and withdrawal of this rejection.

### **Claim 26**

Claim 26 stands rejected as unpatentable over Tang '357 as applied to claim 25, in further view of Tamano '042.

As explained above, Tang is not prior art. The Applicants respectfully request reconsideration and withdrawal of this rejection.

### **New Claims**

New claims 37-40 have been added. Support for these claims may be found in the specification at page 7, lines 29-34. The claims are patentable for at least the same reasons as claim 1, from which they depend.

## **Interview Summary**

The Applicants thank the examiner for the courtesy extended during an interview on June 4, 2003. During that conversation, the following was discussed:

- (A) No exhibit or demonstration was shown.
- (B) The discussion focused on the patentability of the independent claims, specifically claims 1, 9, 15, 19, 28 and 36. Dependent claims 14 and 16 were also discussed with respect to a 112 rejection.
- (C) The following references were discussed:
  - Shirasaki, US 5,895,692
  - Kawakami, US 5,673,077
  - Pastor, US 4,332,879
  - Tang, US 6,066,357
- (D) The amendments to the independent claims contained herein were discussed.
- (E) The applicants argued that Kawakami teaches the application (or removal) of a colorant from a layer that does not survive the removal process, and is not the desired end product of the removal process. By contrast, the layers of claims 9, 15 and 19 remain intact after the dopant is removed. It was agreed that the addition of device limitations to claims 9 and 15 overcome Kawakami. The applicants proposed adding a limitation to claim 19 to specify that the second layer is deposited on the first organic layer, or to make some other amendment, to clarify that the first organic layer remains intact. The examiner indicated that further consideration was needed as to whether such an amendment to claim 19 was needed, and it was agreed to not add a limitation for that purpose at this time pending further consideration.

Pastor was discussed in a manner similar to Kawakami.

The applicants argued that claims 1, 28 and 36 could be distinguished over Shirasaki by a limitation that the dopant diffuses into an organic material without the application of energy. There was a discussion of the appropriateness of a negative claim limitation, after which the positive claim limitation relating to solvent diffusion was proposed and agreed to.

The applicants argued that claim 9 is distinguishable over Shirasaki because the Shirasaki does not have an organic coating from which dopant has been removed that survives the removal process, such that an electrode could then be deposited over the organic coating. Although claims 15 and 19 were not originally rejected in view of Shirasaki, these claims were also

discussed. The examiner identified language at col. 9, lines 46-55 of Shirasaki. The applicants asserted that this language, when read in the context of the entire Shirasaki disclosure, indicates that pigments may be added to an electron transport layer from the top consistent with Figure 7B, and does not teach that pigments may be deposited onto a hole transport layer, followed by the deposition of an electron transport layer, followed by the application of heat to diffuse the pigment into the ETL. The examiner indicated that further consideration of language in col. 9 of Shirasaki would be needed.

With respect to Tang, it was agreed that once the priority claim to the April, 1998 provisional was perfected by this amendment, Tang would no longer be prior art to the extent that the claims are supported by the provisional. The examiner indicated that he would need to consider whether the claims are supported by the provisional.

With respect to the 112 rejections, the addition of language to claim 19 to clarify that the first layer contains the dopant (similar to language in claim 15) was discussed.

It was also agreed that the "pattern" language in claims 14 and 16, in view of the disclosure on page 2 of the specification and the arguments made in this amendment, distinguishes over a uniform blanket of material.

- (F) It is not believed that other pertinent issues were discussed.
- (G) It was agreed that some of the rejections had been overcome, but further consideration was needed with respect to some issues, as discussed in paragraph (E).
- (H) There was no e-mail communication.

## **CONCLUSION**

Consideration and allowance of the above application is respectfully requested.

Respectfully submitted,

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